

Swiss # 95 AA 0001

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. 95-247

WASTE DISCHARGE REQUIREMENTS
FOR
THE COUNTY OF TUOLUMNE AND
UNITED STATES BUREAU OF LAND MANAGEMENT
BIG OAK FLAT (GROVELAND) SANITARY LANDFILL FACILITY
CLASS III LANDFILL
TUOLUMNE COUNTY

The California Regional Water Quality Control Board, Central Valley Region (hereafter Board) finds that:

1. The United States Bureau of Land Management (BLM) owns, and the County of Tuolumne operates, the Big Oak Flat Sanitary Landfill Facility. The BLM and the County of Tuolumne are hereafter collectively referred to as Discharger. The Discharger submitted a ground water monitoring proposal, including a basic site evaluation report, dated July 1985, a Report of Waste Discharge (RWD), dated 28 January 1986, a landfill engineering study, dated May 1988, a Preliminary Closure and Post-Closure Monitoring and Maintenance Plan, dated October 1992, a Corrective Action Plan and Water Quality Monitoring Plan, dated March 1993, and a Feasibility Analysis of Clean Closing, dated 16 November 1994.
2. The landfill was previously regulated by Waste Discharge Requirements Order No. 88-112, in conformance with Title 23, California Code of Regulations (CCR), Division 3, Chapter 15 (hereafter Chapter 15). Order No. 88-112 was amended 17 September 1993 by Order No. 93-200, which implements State Water Resources Control Board Resolution No. 93-62 and federal municipal solid waste (MSW) regulations. These WDRs combine information from Order No. 88-112, amendments made by Order 93-200, the Preliminary Closure and Post-Closure Monitoring and Maintenance Plan, the Corrective Action Plan and Water Quality Monitoring Plan, and quarterly monitoring reports.
3. Land for this 10.5-acre disposal facility is leased by the Discharger from the United States Bureau of Land Management (BLM) and is currently operated under contract by Fraser Construction. The facility is about two miles south of the town of Groveland and two miles southeast of the community of Big Oak Flat in the northwest quadrant of Section 33, T1S, R16E, MDB&M, as shown in Attachment "A", which is incorporated herein and made part of this Order.
4. The 10.5-acre disposal facility consists of a Class III landfill, of which about 5-acres of the total site area is designated fill area, as shown in Attachment "B", which is incorporated herein and made part of this Order.
5. This is an existing landfill unit which initiated operation in 1965. The landfill was under the administrative jurisdiction of the County Road Department prior to 1980 when this responsibility was transferred to the County Division of Environmental Health. The site lease with the BLM expired in 1992 and was granted an extension pending acquisition of the property by the County under a federal program established in 1992.

6. The total amount of fill at the landfill is estimated to be about 135,000 cubic yards. The total amount of materials removed on-site is about 64,000 cubic yards, yielding an in-place waste volume of about 71,000 cubic yards.

WASTES AND THEIR CLASSIFICATION

7. The Discharger proposes to continue to discharge solid waste for disposal in the Class III landfill unit, as shown on Attachment "B". These wastes are classified as 'nonhazardous solid waste' or 'inert waste', using the criteria set forth in Chapter 15. The landfill receives about 5% of the County's solid waste, with a service area encompassing the Highway 120 corridor. The discharge rate is about 15,000 cubic yards (loose) of refuse per year. At the current disposal rate, the landfill is expected to reach final grades in the year 2001.
8. The Discharger also proposes to discharge wastes containing greater than one percent (>1%) friable asbestos for disposal in the Class III landfill unit. These wastes are classified as hazardous under Title 22 of the CCR. However, because these wastes do not pose a threat to ground water quality, Section 25143.7 of the Health and Safety Code permits their disposal in any landfill which has WDRs that specifically permit the discharge, provided the wastes are handled and disposed of in accordance with other applicable State and Federal statutes and regulations.
9. The Discharger presently does not have a formal collection and disposal procedure for leachate generated by the landfill unit in place at this facility.

DESCRIPTION OF THE SITE

10. Most of the land surrounding the Big Oak Flat landfill facility is undeveloped and rural in nature. The landfill itself, as well as land to the south and west of the site, is owned by the BLM. The highest concentration of residences (about 35 homes) is about one-half mile to the northeast of the facility. Land surrounding the facility not owned by the BLM is zoned Agricultural or Residential Estate (5-acre minimum). A few scattered residences are about one-half mile southeast of the facility. The edge of the Groveland town site is two (2) miles to the north of the facility.
11. The landfill is in a general area of steep topography characterized by rock outcroppings. Pine and manzanita dominate the landscape.
12. The landfill is at the upper end of a ravine near the apex of a knoll at an elevation of about 3300 feet. The site is characterized by a lack of soil mantle with exposed rock at grade and underlying the entire facility. The underlying geology is slate (metamorphic rocks) of the Calaveras Formation. The underlying rocks are reported to be deficient in fine material and slate outcroppings have the appearance of having a high potential permeability. The underlying rock is reported to be "rippable". Oxidized (weathered) rock is reported to depths of 10 to 30 feet. This zone of oxidation is considered more permeable than the underlying bedrock and could give rise to local perched ground water conditions.
13. In general, the hydrologic regime at the facility is expected to be a hardrock, fracture-dominated type, with water flowing along fractures or veins.
14. Ground water occurs beneath the landfill at a depth of approximately 25 to 82 feet below ground surface, based upon measurements made on GMW-2 and GMW-3. Observed

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seasonal fluctuations over two years in the water elevations are about 8 to 9 feet in GMW-2 and about 6 to 11 feet in GMW-3.

15. The beneficial uses of ground water are domestic and agricultural supply. Current ground water use in the area is limited and the majority of domestic water is supplied by the Groveland Community Services District, the source being the Hetch Hetchy Mountain Tunnel. There is a scattering of domestic wells in use around the site (about 12 within one-half mile). Supply wells are typically 100-300 feet deep, tapping fractures with varying yields and quality. Spring activity has been reported in areas proximate to the site.
16. The facility drainage area is reported to be approximately 5.5 acres, which can be reduced to 2.4 acres with proper drainage controls.
17. The facility receives an average of 36 inches of precipitation per year, as measured at the City of Groveland between the years 1920-1986. The mean annual evaporation at this facility is 64 inches measured at the Don Pedro Reservoir (19 year average) about seven miles southwest of the site. The dry summers at both Groveland and Don Pedro are similar. Average evaporation for the period between May-November is 50 inches.
18. The 100-year, 24-hour precipitation event for the facility is 6.9 inches (Department of Water Resources, Rainfall Depth-Duration-Frequency for California, 1986 - Groveland 2 Weather Station).
19. The site is not within a 100-year floodplain.
20. Most of the runoff from the landfill flows to the west in two ditches that extend along the north and south limits of fill. The north and south drainage ditches discharge into a small storm water collection pond located to the west of the fill area. Surface runoff from the top deck drains to the east into a swale which directs the runoff into the north and south drainage ditches. Surface runoff from the west slope drains down the slope to the storm water collection pond. A second drainage ditch which collects run-on from the borrow slope north of the landfill parallels the north drainage ditch and bypasses the storm water collection pond, discharging directly to the natural drainage swale west of the landfill.
21. The containment basin has overflowed during the wet season, with discharge to an unnamed tributary, thence to Little Jackass Creek (confluence 5,000 feet), thence to Big Jackass Creek (confluence 1.5 mile), thence to Moccasin Creek (confluence two miles), thence to its confluence with the Tuolumne River (upper arm of Lake Don Pedro). Flows in Moccasin Creek upgradient of Moccasin Reservoir have been diverted and piped under and emerge downgradient of the reservoir.
22. The beneficial uses of Little Jackass Creek, Big Jackass Creek and Moccasin Creek are preservation and enhancement of fish, wildlife, and other aquatic resources. The beneficial uses of Lake Don Pedro, in addition to the above, are recreation; esthetic enjoyment; domestic, municipal, agricultural supply, and hydroelectric power generation.
23. The only known fault in the area (Melones Fault) is about two miles southwest of the facility. Geomorphic evidence of any recent seismic activity is lacking.
24. Ground water monitoring has confirmed the presence of volatile organic compounds indicating a release has occurred. In response to the release, the Discharger has submitted a

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Corrective Action Plan and Water Quality Monitoring Plan dated March 1993. Corrective actions already implemented at the facility include the following: 1) a reduction in the size of the working face; 2) improvement in load checking programs; 3) regrading of the landfill surface during the summer of 1992; 4) repair and upgrading of the west face of the landfill to eliminate previous erosion damage and replace intermediate cover soils; 5) cleaning out of the containment pond to provide more capacity; 6) white goods, including refrigerators, are no longer placed in the landfill; 7) implementation of household hazardous waste collection days to allow the public to dispose of household hazardous wastes in an acceptable manner; and 8) implementation of a waste oil collection site.

25. The storm water collection pond is an undesigned pond with a surface area of approximately 2,900 square feet and an average depth of approximately 3.3 feet. An access road to monitoring well GMW-2 creates the west berm of the pond. Runoff drains from the pond through a corrugated metal pipe placed approximately three feet below the top of the berm to the natural drainage swale west of the collection pond. An overflow was constructed at the north end of the berm which directs runoff into the natural drainage swale west of the collection pond. Functionally, the storm water collection pond provides minimal surge capacity to slow discharge to the natural drainage swale, and as such could be removed without significant impact to site drainage controls. The pond location, proximity to the lease boundary, and topographic features of the area prevent the pond from being enlarged to provide designed drainage control for anything other than minor storm events.

The pond functions as a collection point for sampling runoff from rainfall events during the winter season. Any leachate seeping from the toe of the landfill would flow into the collection pond to commingle with surface runoff.

OPERATION AND DESIGN OF FACILITIES

26. Operation of the facility began in 1965. The landfill was developed as a ravine and area fill. The area method of refuse disposal is currently being used and will continue until closure.
27. The landfill was not designed with a base seal or leachate collection and removal system.
28. The facility has had a history of surface runoff problems due mainly to inadequate grading of perimeter runoff diversion ditches and ponding on the top deck. The Discharger regraded diversion ditches and the top deck in the summer of 1994.
29. Although the landfill has capacity to continue operations until 2001, the Discharger is moving forward with plans to close the facility as soon as a transfer station can be established in the area.

CEQA AND OTHER CONSIDERATIONS

30. The action to revise WDRs for this facility is exempt from the provisions of the California Environmental Quality Act (Public Resources Code Section 21000, et seq.), in accordance with Title 14, CCR, Section 15301.
31. On 9 October 1991, the United States Environmental Protection Agency (USEPA) promulgated regulations (Title 40, Code of Federal Regulations, Parts 257 and 258, "federal municipal solid waste (MSW) regulations" or "Subtitle D") that apply, in California, to dischargers who own or operate Class II or Class III landfill units at which municipal solid

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waste (MSWLF) is discharged. The majority of the federal MSW regulations became effective on the "Federal Deadline", which is 9 October 1993. Since this landfill received waste until July 1994, Subtitle D requirements which went into effect on 9 October 1993 are applicable to this facility.

32. This Order implements:

- a. the Water Quality Control Plan for the Sacramento River Basin and the San Joaquin River Basin, Third Edition;
- b. the prescriptive standards and performance goals of Chapter 15, Division 3, Title 23 of the California Code of Regulations, effective 27 November 1984, and subsequent revisions;
- c. the prescriptive standards and performance criteria of Part 258, Title 40 of the Code of Federal Regulations (Subtitle D of the Resource Conservation and Recovery Act); and
- d. State Water Resources Control Board Resolution No. 93-62, Policy for Regulations of Discharges of Municipal Solid Waste, adopted 17 June 1993.

PROCEDURAL REQUIREMENTS

33. All local agencies with jurisdiction to regulate land use, solid waste disposal, air pollution, and to protect public health have approved the use of this site for the discharges of waste to land stated herein.
34. The Board has notified the Discharger and interested agencies and persons of its intention to issue the WDRs for this facility.
35. In a public hearing, the Board heard and considered all comments pertaining to this facility and discharge.

IT IS HEREBY ORDERED that Order No. 88-112 is rescinded and Attachment 1 of Order 93-200 is amended to delete the County of Tuolumne and the United States Bureau of Land Management (for the Big Oak Flat Sanitary Landfill) and it is further ordered that the County of Tuolumne and its agents, assigns and successors, in order to meet the provisions of Division 7 of the California Water Code and the regulations adopted thereunder, shall comply with the following:

A. PROHIBITIONS.

1. The discharge of 'hazardous waste' at this facility, except for waste that is hazardous due only to its friable asbestos content, is prohibited. The discharge of 'designated waste' at this facility is prohibited. For the purpose of this Order, the terms 'hazardous waste' and 'designated waste' are as defined in Chapter 15.
2. The discharge of liquid or semi-solid waste (i.e., waste containing less than 50% solids) to the landfill is prohibited.
3. The discharge to the landfill of solid waste containing free liquid or moisture in excess of the waste's moisture holding capacity is prohibited.

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4. The discharge of solid or liquid waste or leachate to surface waters, surface water drainage courses, or to ground water is prohibited.
5. The discharge of waste to ponded water from any source is prohibited.
6. The discharge of waste within 100 feet of natural surface waters is prohibited.
7. The discharge of wastes which have the potential to reduce or impair the integrity of containment structures or which, if commingled with other wastes in the unit, could produce violent reaction, heat or pressure, fire or explosion, toxic by-products, or reaction products which in turn:
 - a. require a higher level of containment than provided by the unit,
 - b. are 'restricted hazardous wastes', or
 - c. impair the integrity of containment structures,is prohibited.
8. The ponding of liquid, other than the designated drainage basin, on any part of the facility within the property boundary is prohibited.

B. DISCHARGE SPECIFICATIONS.

General Specifications

1. Wastes shall only be discharged into the landfill unit specifically designed for their containment, as stated in Findings 7 and 8 of this Order, as shown on Attachment "B".
2. The handling and disposal of friable asbestos containing wastes at this facility shall be in accordance with all applicable federal and state statutes and regulations.
3. A minimum separation of five feet shall be maintained between wastes or leachates and the highest anticipated elevation of underlying ground water, including the capillary fringe.
4. Water used for facility maintenance shall be limited to the minimum amount necessary for dust control.

C. FACILITY SPECIFICATIONS

General Facility Construction

5. Materials used to construct liners shall have appropriate physical and chemical properties to ensure containment of discharged wastes over the operating life, closure, and post-closure maintenance period of the landfill.
6. Materials used to construct leachate collection and removal systems (LCRSs) shall have appropriate physical and chemical properties to ensure the required transmission of leachate over the life of the landfill unit and the post-closure maintenance period.

8. LCRSs shall be designed, constructed, and maintained to collect twice the anticipated daily volume of leachate generated by the landfill and to prevent intrusion with ground water.

Supervision and Certification of Construction

9. All containment structures shall be designed and constructed under the direct supervision of a California registered civil engineer or a certified engineering geologist and shall be certified by that individual as meeting the prescriptive standards and performance goals of Chapter 15.

Landfill Specifications

10. Interim cover (daily and intermediate) at the site shall be designed and constructed to minimize percolation of precipitation through wastes. Nonactive landfill areas which will not receive additional waste shall be covered with a minimum two-foot thickness of earthen material before the rainy season and shall be maintained until closure of the landfill. This two-foot thick earthen layer may be used as the foundation layer to the final cover. The earthen material shall have soil properties which allow for compaction, resistance to erosion, and resistance to infiltration. The active disposal area shall be confined to the smallest area practicable, based on the anticipated quantity of waste discharge and other disposal facility operations.
11. The migration of methane and other gases from the landfill shall be controlled as necessary to prevent nuisance conditions or the impairment of beneficial uses of water. Methane and other landfill gases shall be adequately vented, removed from the landfill, or otherwise controlled in order to prevent danger of explosion or health effects due to mitigation through the vadose zone.

Landfill Closure Specifications

12. The closure of the landfill unit shall be performed under the direct supervision of a California registered civil engineer or certified engineering geologist.
13. The closed landfill unit shall be provided with at least two permanent monuments, installed by a licensed land surveyor, from which the location and elevation of all wastes, containment structures, and monitoring facilities can be determined throughout the post-closure maintenance period.
14. At closure, the landfill unit shall receive a final cover which is designed to function with minimum maintenance and consists, at a minimum, of a two-foot thick foundation layer which may contain waste materials, overlain by a one-foot thick clay barrier, and finally by a one-foot thick vegetative soil layer, or an engineered equivalent final cover approved by the Board pursuant to Subsections 2510(b) and (c) of Chapter 15.
15. The landfill clay barrier shall have a hydraulic conductivity of 1×10^{-6} cm/sec or less and a minimum relative compaction of 90 percent. Hydraulic conductivities of the clay barrier materials shall be determined by laboratory tests using water. Hydraulic conductivities determined through laboratory methods shall be confirmed by field testing in accordance with the Standard Provisions and Reporting Requirements as described in Provision E1. Construction methods and quality assurance procedures

shall be sufficient to insure that all parts of any clay barrier meet the hydraulic conductivity and compaction requirements.

16. Design of the landfill cap shall include a Construction Quality Assurance Plan, which shall:
 - a. be submitted for review and approval by the Board staff prior to construction;
 - b. demonstrate that the landfill cap has been constructed according to the specifications and plans as approved by the Board staff; and
 - c. provide quality control on the materials and construction practices used to construct the waste management unit and prevent the use of inferior products and/or materials which do not meet the approved design plans or specifications.
17. Vegetation shall be planted and maintained over each closed landfill unit. Vegetation shall be selected to require a minimum of irrigation and maintenance and shall have a rooting depth not in excess of the vegetative layer thickness.
18. Closed landfill units shall be graded to at least a three-percent grade and maintained to prevent ponding.
19. Areas with slopes greater than ten percent, surface drainage courses, and areas subject to erosion by wind or water shall be designed and constructed to prevent such erosion.

Post-Closure

20. The post-closure maintenance period shall continue until the board determines that remaining wastes in the landfill will not threaten water quality.

Protection from Storm Events

21. The landfill and related containment structures shall be constructed and maintained to prevent, to the greatest extent possible, ponding, infiltration, inundation, erosion, slope failure, washout, and overtopping under 100-year, 24-hour precipitation conditions.
22. Precipitation and drainage control systems shall be designed and constructed to accommodate the anticipated volume of precipitation and peak flows from surface runoff under 100-year, 24-hour precipitation conditions, as described in Finding No. 21 above.
23. Surface drainage from tributary areas and internal site drainage from surface or subsurface sources shall not contact or percolate through wastes.
24. Annually, prior to the anticipated rainy season, but no later than **1 November**, any necessary erosion control measures shall be implemented, and any necessary construction, maintenance, or repairs of precipitation and drainage control facilities shall be completed to prevent erosion or flooding of the site and to prevent surface drainage from contacting or percolating through wastes.

D. RECEIVING WATER LIMITATIONS

Water Quality Protection Standards

The concentrations of indicator parameters or waste constituents in waters passing through the Points of Compliance shall not exceed the 'water quality protection standards' established pursuant to Monitoring and Reporting Program No. 95-247, which is attached to and made part of this Order.

E. PROVISIONS

1. The Discharger shall comply with the Standard Provisions and Reporting Requirements, dated September 1993, which are hereby incorporated into this Order. The Standard Provisions and Reporting Requirements contain important provisions and requirements with which the Discharger must comply. A violation of any of the Standard Provisions and Reporting Requirements is a violation of these waste discharge requirements.
2. The Discharger shall comply with all applicable provisions of 23 CCR Chapter 15 and 40 CFR Part 258 that are not specifically referred to in this Order.
3. The Discharger shall maintain a copy of this Order at the site and make it available at all times to site operating personnel, who shall be familiar with its contents.
4. The Discharger shall notify the Board, in writing, of any proposed change in ownership or responsibility for construction or operation of the facility. The Discharger shall also notify the Board of a material change in the character, location, or volume of the waste discharge and of any proposed expansions or closure plans. This notification shall be given 120 days prior to the effective date of the change and shall be accompanied by an amended Report of Waste Discharge and any technical documents that are needed to demonstrate continued compliance with these WDRs.
5. The Discharger shall comply with Monitoring and Reporting Program No. 95-247, which is attached to and made part of this Order. This compliance includes, but is not limited to, maintenance of waste containment facilities and precipitation and drainage controls, and monitoring ground water, leachate from the landfill unit(s), and surface waters, per Monitoring and Reporting Program No. 95-247 throughout the post-closure maintenance period. A violation of Monitoring and Reporting Program No. 95-247 is a violation of these waste discharge requirements.
6. The Discharger shall maintain legible records of the volume and type of each waste discharged at the landfill and the manner and location of discharge. Such records shall be maintained at the facility until the beginning of the post-closure maintenance period. These records shall be available for review by representatives of the Board and of the State Water Resources Control Board at any time during normal business hours. At the beginning of the post-closure maintenance period, copies of these records shall be sent to the Regional Board.
7. The Discharger shall provide proof to the Board **within sixty days after completing final closure** that the deed to the landfill facility property, or some other

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instrument that is normally examined during title search, has been modified to include, in perpetuity, a notation to any potential purchaser of the property stating that:

- a. the parcel has been used as a municipal solid waste landfill (MSWLF);
 - b. land use options for the parcel are restricted in accordance with the post-closure land uses set forth in the post-closure plan and in WDRs for the landfill; and
 - c. in the event that the Discharger defaults on carrying out either the post-closure maintenance plan or any corrective action needed to address a release, then the responsibility for carrying out such work falls to the property owner.
9. The Discharger shall remove and relocate any wastes discharged at this facility in violation of this Order.
 10. Within six months of the adoption of these requirements, the Discharger shall submit to the board and to the Department of Health Services for approval, a report describing a periodic load-checking program to be implemented by the Discharger to ensure that 'hazardous wastes' and 'designated wastes' are not discharged to the Class III landfill.
 11. The Discharger shall notify the Board within 24 hours of any flooding, equipment failure, slope failure, or other change in site conditions which could impair the integrity of waste facilities or of precipitation and drainage control structures.
 12. The owner of the facility shall have the continuing responsibility to assure protection of usable waters from discharge wastes and from gases and leachate generated by discharged waste during the active life, closure, and post-closure maintenance period of the facility and during subsequent use of the property for other purposes.
 13. The Discharger shall complete the tasks outlined in these WDRs and the attached Monitoring and Reporting program No. 95-247 in accordance with the following time schedule:

<u>Task</u>	<u>Compliance Date</u>
a. Submit concentration limits for constituents of concern under Monitoring and Reporting Program No. 95-247 as part of the annual report.	30 January 1996
b. Submit a corrective action plan for source abatement. Propose location and schedule for, 1) installation of a new background monitoring well pursuant to Monitoring and Reporting Program No. 95-247, and 2) implementation of a two-foot thick intermediate cover.	1 February 1996
c. Submit an evaluation of the effectiveness of the corrective action program and recommend further mitigation measures, if applicable.	1 February 1997

- d. Submit a final closure and postclosure maintenance plan. **1 November 2000**
- e. Cease accepting waste and begin closure activities. **1 May 2001**


F. FINANCIAL ASSURANCE

The Discharger shall obtain and maintain assurances of financial responsibility for initiating and completing corrective action for all known and reasonably foreseeable releases from the landfill. The Discharger shall also establish and maintain an irrevocable closure fund or other means to ensure closure and post-closure maintenance of the landfill.

G. REPORTING REQUIREMENTS

1. The Discharger or persons employed by the Discharger shall comply with all notice and reporting requirements of the State Department of Water Resources with regard to the construction, alteration, destruction, or abandonment of all monitoring wells used for compliance with this Order or with Monitoring and Reporting Program No. 95-247, as required by Sections 13750 through 13755 of the California Water Code.
2. The Discharger shall submit a closure and post-closure maintenance plan (or submit suitable modifications to a pre-existing plan), that complies with 40 CFR 258.60 and 258.61, with Article 8 of Chapter 15, and Title 14 of the CCR.
3. In the event of any change in ownership of this facility, the Discharger shall notify the succeeding owner or operator, in writing, of the existence of this Order. A copy of that notification shall be sent to the board.
4. The Discharger shall submit a status report regarding the financial assurances for corrective action and closure every five years after the date of adoption of these requirements that either validates the ongoing viability of the financial instrument or proposes and substantiates any needed changes.
5. The board will review this Order periodically and will revise these requirements when necessary.

I, WILLIAM H. CROOKS, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on 27 October 1995.


WILLIAM H. CROOKS, Executive Officer

Attachments

KAS

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. 95-247
FOR

THE COUNTY OF TUOLUMNE AND
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The Discharger shall maintain water quality monitoring systems that are appropriate for detection monitoring and corrective action and that comply with the provisions of Title 23, California Code of Regulations (CCR), Division 3, Chapter 15, Article 5.

Monitoring data indicate a release from the landfill. The following organic compounds have been detected in ground water monitoring wells: 1,1-dichloroethane (1.0-3.8 $\mu\text{g/l}$), bis(2-ethylhexyl)phthalate (5-11 $\mu\text{g/l}$), dichlorodifluoromethane (0.65-28.2 $\mu\text{g/l}$), naphthalene (0.55 $\mu\text{g/l}$), 1,2,4 trimethylbenzene (0.65 $\mu\text{g/l}$), and trichlorofluoromethane (0.53-3.1 $\mu\text{g/l}$). Dichlorodifluoromethane (0.94-1.9 $\mu\text{g/l}$), 1,1-dichloroethane (1.1-2.0 $\mu\text{g/l}$), 1,2-dichloroethane (1.5 $\mu\text{g/l}$), 1,1,1-trichloroethane (1.2-4.8 $\mu\text{g/l}$), and trichlorofluoromethane (2.0 $\mu\text{g/l}$) were also detected at spring GS-1. The chlorinated hydrocarbons chloromethane and chloroethane were detected in the monitor wells prior to February 1994. Closure and capping of the landfill will serve as part of a corrective action under Article 5 of Chapter 15.

Compliance with this Monitoring and Reporting Program, and with the companion Standard Provisions and Reporting Requirements, is ordered by Waste Discharge Requirements Order No. 95-247. Failure to comply with this Program, or with the Standard Provisions and Reporting Requirements, constitutes non-compliance with the WDRs and with the Water Code, which can result in the imposition of civil monetary liability.

A. REPORTING

The Discharger shall report monitoring data and information as required in this Monitoring and Reporting Program and as required in the Standard Provisions and Reporting Requirements. Reports which do not comply with the required format will be **REJECTED** and the Discharger shall be deemed to be in non-compliance with the WDRs. In reporting the monitoring data required by this program, the Discharger shall arrange the data in tabular form so that the date, the constituents, the concentrations, and the units are readily discernible. The data shall be summarized in such a manner as to illustrate clearly the compliance with waste discharge requirements or the lack thereof. A short discussion of the monitoring results, including notations of any water quality violations, shall precede the tabular summaries.

Field and laboratory tests shall be reported in the semi-annual monitoring reports. Semi-annual monitoring reports shall be submitted to the Board by the **15th day of the month** following the calendar quarter in which the samples were taken. The results of any monitoring done more frequently than required at the locations specified herein shall be reported to the Board. An annual report shall be submitted to the Board by **30 January** of each year which contains both tabular and graphical summaries of the monitoring data obtained during the previous twelve months, so as to show historical trends at each well. The report shall include a discussion of the progress toward re-establishment of compliance with waste discharge requirements and water quality protection standards.

Method detection limits and practical quantitation limits shall be reported. All gas chromatograph peaks shall be reported, including those which cannot be quantified and/or specifically identified. Metals shall be analyzed according to the methods listed in Attachment "D".

B. REQUIRED MONITORING REPORTS

1. Water Quality Protection Standard Report

The Discharger submitted interim water quality protection standards in the "*Corrective Action Plan and Water Quality Monitoring Plan*" dated March 1993. The water quality protection standards in the form of upper tolerance levels for constituents of concern were updated in the Detection Monitoring Report for the First Quarter 1995. Any changes to this water quality protection standard shall be described in the annual monitoring report.

2. Detection Monitoring and Corrective Action Report

The Discharger shall submit reports of the results of detection monitoring and corrective action in accordance with the schedules specified in this Monitoring and Reporting Program.

3. Annual Monitoring Summary Report

The Discharger shall submit the Annual Monitoring Summary Report as specified in the Standard Provisions and Reporting Requirements.

4. Constituents-of-Concern (COC) 5 Year Report

In the absence of a *new* release being indicated, the Discharger shall monitor all Constituents of Concern for all Monitoring Points for each monitored medium for all COCs every fifth year, beginning with calendar year 1995 (the first Reporting Period ends 31 March 1996) with subsequent COC monitoring efforts being carried out every fifth year thereafter alternately in the Summer (Reporting period ends 30 September) and Winter (Reporting Period ends 31 March). The COC Report may be combined with a Detection Monitoring Report or an Annual Summary Report having a Reporting Period that ends at the same time.

5. Constituents-of-Concern (COC) Leachate Detection Report

The Discharger shall report to the Board by no later than 31 January of a given year the analytical results of the leachate sample taken the previous Fall, including an identification of all detected COCs in Attachment "D" that are not on the landfill's Constituent of Concern list.

During any year in which a Spring leachate re-test is performed, the Discharger shall submit a report to the Board, by no later than 31 July of that year, identifying all constituents which must be added to the landfill's COC list as a result of having been detected in both the (previous calendar year's) Fall sample and in the Spring re-test sample.

Standard Observations

Each monitoring report shall include a summary and certification of completion of all Standard Observations for the waste management unit, for the perimeter of the WMU, and for the receiving waters. The standard observations shall be performed on a weekly basis and shall include those elements as defined in the Standard Provisions and Reporting Requirements.

C. MONITORING

If the Discharger, through a detection monitoring program, or the Board finds that there is a statistically significant increase in indicator parameters or waste constituents over the water quality protection standards (established pursuant to Monitoring and Reporting Program No. 95-247) at or beyond the Points of Compliance, the Discharger shall notify the Board or acknowledge the Board's finding in writing within seven days, and shall immediately resample for the constituent(s) or parameter(s) at the point where the standard was exceeded. Within 90 days, the Discharger shall submit to the Board the results of the resampling and either:

- a. a report demonstrating that the water quality protection standard was not, in fact, exceeded; or
- b. an amended Report of Waste Discharge for the establishment of a verification monitoring program, per Section 2557 of Chapter 15, which is designed to verify that water quality protection standards have been exceeded and to determine the horizontal and vertical extent of pollution.

If the Discharger, through an evaluation monitoring program, or the Board verifies that water quality protection standards have been exceeded at or beyond the Points of Compliance, the Discharger shall notify the Board or acknowledge the Board's finding in writing within seven days. Within 180 days, the Discharger shall submit to the Board an amended Report of Waste Discharge for the establishment of a corrective action program, per Section 2558 of Chapter 15, which is designed to achieve compliance with the water quality protection standards.

D. REQUIRED MONITORING PROGRAMS

1. Solid Waste Monitoring Program

Nonhazardous Solid Waste Monitoring

The Discharger shall monitor all wastes discharged to the Class III landfill unit on a **quarterly and annual** basis and report to the Board as required. The Discharger shall monitor all wastes as follows:

<u>Parameter</u>	<u>Reporting Units</u>	<u>Frequency</u>
Quantity discharged	tons	Quarterly
Type of material discharged	—	Quarterly
Source(s) of material discharged	—	Quarterly
Minimum elevation of discharge	feet & tenths, MSL	Quarterly
Capacity of unit remaining	percent	Annually

2. Detection Monitoring and Corrective Action Program

For each monitored medium, all Monitoring Points assigned to detection monitoring and/or corrective action monitoring shall be monitored once each calendar quarter for the Monitoring Parameters listed in this Program, unless otherwise specified. The Discharger shall report, in writing, to the regional board on the effectiveness of the corrective action program. The Discharger shall submit these reports at least semi-annually.

MONITORING AND REPORTING PROGRAM
BIG OAK FLAT (GROVELAND) SANITARY LANDFILL FACILITY
CLASS III LANDFILL
TUOLUMNE COUNTY

For any given monitored medium, a sufficient number of samples shall be taken from all Monitoring Points to satisfy the data analysis requirements for a given Reporting Period, and shall be taken in a manner that ensures sample independence to the greatest extent feasible.

Ground water sampling shall also include an accurate determination of the ground water surface elevation and field parameters (pH, temperature, electrical conductivity, turbidity) for that Monitoring Point. Ground water elevations taken prior to purging the well and sampling for Monitoring Parameters shall be used to fulfill the ground water gradient/direction analyses required. For each monitored ground water body, the Discharger shall measure the water level in each well and determine ground water gradient and direction at least semi-annually, including the times of expected highest and lowest elevations of the water level for the respective ground water body. Ground water elevations for all upgradient and downgradient wells for a given ground water body shall be measured within a period of time short enough to avoid temporal variations in ground water flow which could preclude accurate determination of ground water gradient and direction. This information shall be included in the quarterly monitoring reports.

Statistical or non-statistical analysis should be performed as soon as the monitoring data are available.

3. Leachate Monitoring

The landfill currently has no leachate control or monitoring system. A small berm and containment basin is located within the original drainage below the toe of the waste management unit. The basin collects rainfall runoff and leachate that may discharge from the landfill. When leachate is present, leachate monitoring shall be conducted as specified in Table 1 - Leachate Monitoring Program.

TABLE 1 - LEACHATE MONITORING PROGRAM

<u>Parameter</u>	<u>Units</u>	<u>Frequency</u>
Field Parameters		
Total Flow	gallons	Monthly
Flow Rate	gallons/day	Monthly
Specific Conductance	µmhos/cm	Monthly
pH	number	Monthly
Monitoring Parameters		
Total Dissolved Solids (TDS)	mg/L	Quarterly
Chlorides	mg/L	Quarterly
Sulfates	mg/L	Quarterly
Nitrate - Nitrogen	mg/L	Quarterly
Constituents of Concern		
Total Organic Carbon	mg/L	Annually
Carbonate	mg/L	Annually
Bicarbonate	mg/L	Annually
Alkalinity	mg/L	Annually
Volatile Organic Compounds (EPA Method 8260, see Attachment D)	µg/L	Annually
Semi-Volatile Organic Compounds (EPA Method 8270, see Attachment D)	µg/L	Annually
Organophosphorus Compounds (EPA Method 8141, see Attachment E)	µg/L	Annually
Chlorophenoxy Herbicides (EPA Method 8150, see Attachment E)	µg/L	Annually
Inorganics (dissolved) (See Attachment E for Method)	mg/L	Annually

4. Ground Water Monitoring

Field and laboratory tests shall be reported in the semi-annual monitoring reports. All Monitoring Parameters shall be graphed so as to show historical trends at each well.

The ground water surface elevation (in feet and hundredths, M.S.L.) in all wells shall be measured on a semi-annual basis and used to determine the velocity and direction of ground water flow. This information shall be displayed on a water table contour map and/or ground water flow net for the site and submitted with the semi-annual monitoring reports.

The ground water monitoring network consists of three monitor wells and one seasonal spring. Currently, monitoring well GMW-1 is designated as the background well. However, the distance of GMW-1 from the landfill and a lack of construction information limit its utility as a background monitoring point. Consequently, a new background well shall be established and shall be monitored quarterly to determine concentration limits. Two monitoring wells (GMW-2 and GMW-3) and the spring (GS-1) are designated as the downgradient compliance points. Spring GS-1 is within the "Big Oak Flat Landfill Creek" drainage about 300 feet west of the landfill's drainage pond. The spring discharge is generally in the creek bed and the point of its discharge changes from year to year.

Samples shall be collected from all the wells and the spring at the frequency and for the parameters specified in Table 2 - Ground Water Corrective Action Monitoring Program.

TABLE 2 - GROUND WATER CORRECTIVE ACTION MONITORING PROGRAM

<u>Parameter</u>	<u>Units</u>	<u>Frequency</u>
Field Parameters*		
Temperature	°C	Quarterly
Ground Water Elevation	Ft. & hundredths, MSL	Quarterly
Specific Conductance	µmhos/cm	Quarterly
pH	number	Quarterly
Turbidity	Turbidity units	Quarterly
Monitoring Parameters*		
Total Dissolved Solids (TDS)	mg/L	Quarterly
Chloride	mg/L	Quarterly
Potassium	mg/L	Quarterly
Volatile Organic Compounds (EPA Method 8260, See Attachment D)	µg/L	Quarterly
Constituents of Concern*		
Sulfate	mg/L	Quarterly
Nitrate - Nitrogen	mg/L	Quarterly
Calcium	mg/L	Quarterly
Magnesium	mg/L	Quarterly
Sodium	mg/L	Quarterly
Carbonate	mg/L	Quarterly
Bicarbonate	mg/L	Quarterly
Total Organic Carbon	mg/L	5 years
Alkalinity	mg/L	5 years
Volatile Organic Compounds (EPA Method 8260, See Attachment E)	µg/L	5 years
Semi-Volatile Organic Compounds (EPA Method 8270, See Attachment E)	µg/L	5 years
Organophosphorus Compounds (EPA Method 8141, See Attachment E)	µg/L	5 years
Chlorophenoxy Herbicides (EPA Method 8150, See Attachment E)	µg/L	5 years
Inorganics (dissolved)* (See Attachment E for Method)	mg/L	5 years

* Background wells to be monitored quarterly for one year to determine a concentration limit.

5. Surface Water Monitoring

Due to the location of the landfill along a ridge line and within the upper portion of a drainage, no upstream surface water exists at the landfill. Surface water occurs only as storm runoff during major rain events. Four surface water sites (GLC-1, LJC-1, LJC-2, and the drainage basin) shall be sampled as a part of the detection monitoring program.

Surface water site GLC-1 is below the landfill in the Big Oak Flat Landfill Creek upstream of the spring GS-1. Little Jackass Creek is located about 3/4 mile south of the landfill. Surface water location LJC-1 is upstream from the confluence with the Big Oak Flat Landfill Creek and surface water location LJC-2 is immediately downstream of the confluence with the creek. The sampling locations are shown on Attachment "C" attached hereto.

Surface water samples are to be collected after the first storm of the rainy season which produces significant flow and quarterly thereafter when water is present. Samples shall be collected from all stations and analyzed at the frequency and for the monitoring parameters specified in Table 3 - Surface Water Monitoring Program.

Surface water monitoring reports shall be submitted with the corresponding semi-annual ground water monitoring and shall include evaluation of potential impacts of the facility on surface water quality and compliance with the Water Quality Protection Standard.

TABLE 3 - SURFACE WATER MONITORING PROGRAM

<u>Parameter</u>	<u>Units</u>	<u>Frequency</u>
Field Parameters*		
Temperature	°C	Quarterly
Specific Conductance	µmhos/cm	Quarterly
pH	number	Quarterly
Turbidity	Turbidity units	Quarterly
Dissolved Oxygen	mg/L	Quarterly
Monitoring Parameters*		
Total Suspended Solids (TSS)	mg/L	Quarterly
Total Dissolved Solids (TDS)	mg/L	Quarterly
Oil and Grease	mg/L	Quarterly
Chloride	mg/L	Quarterly
Volatile Organic Compounds (EPA Method 8260, See Attachment D)	µg/L	Quarterly
Constituents of Concern*		
Carbonate	mg/L	Quarterly
Bicarbonate	mg/L	Quarterly
Calcium	mg/L	Quarterly
Magnesium	mg/L	Quarterly
Nitrate - Nitrogen	mg/L	Quarterly
Potassium	mg/L	Quarterly
Sodium	mg/L	Quarterly
Sulfate	mg/L	Quarterly
Total Organic Carbon	mg/L	5-years
Alkalinity	mg/L	5-years
Chemical Oxygen Demand	mg/L	5-years
Inorganics*(total recoverable metals) (See Attachment E for Method)	mg/L	5-years

* To be monitored quarterly for one year to determine a concentration limit.

6. Vadose Zone Monitoring

Based on the fact that the weathered bedrock underlying the landfill lacks traditional vadose zone soils containing pore water, the facility was granted an exemption to vadose zone monitoring on 2 October 1989.

E. WATER QUALITY PROTECTION STANDARD

The Water Quality Protection Standard (Standard) consists of the following elements:

- a. Constituents of Concern;
- b. Concentration Limits;
- c. Monitoring Points;
- d. Points of Compliance; and
- e. Compliance Period.

Each of these is described as follows:

1. Constituents of Concern

The 'COC list' (list of Constituents of Concern required under 23 CCR 2550.3) shall include all constituents listed in Tables 1, 2, and 3 (above), the Waste Discharge Requirements Order No. 95-_____, and all constituents listed in Attachment "D". The Discharger shall monitor all COCs every five years, or more frequently as required under the corrective action monitoring program.

2. Concentration Limits

The Concentration Limit for any given Constituent of Concern or Monitoring Parameter intrawell comparison in ground water (i.e., the uppermost aquifer) at a landfill shall be as follows, and shall be used as the basis of comparison with data from the Monitoring Points in that monitored medium:

- a. The value established in the Monitoring and Reporting Program for that constituent and medium;
 - (1) For inorganic constituents with less than 15% of background analyses below the laboratory detection level:

Tolerance Limit Method

- Tolerance levels to be calculated per the method described in EPA/530 SW-89-026, pages 5-20 through 5-24
 - The following statistical tables will be used for calculation of tolerance limits:
 - One-sided interval: EPA/530-SW-89-026, page B-9
 - Two-sided interval (pH only): Miller, et al, 1924, page 413
 - The constants used from the statistical tables will reflect the following:
 - Probability Level (Y) = 95%
 - Coverage (P) = 95%
 - Non-detects in the background dataset will be treated at 1/2 their detection levels.
 - Statistical exceedance of the tolerance level will trigger verification testing as described in Chapter 15.
- (2) For inorganic constituents with greater than 15% of background concentrations below the laboratory detection level and those constituents having a non-normal distribution:

Graphical Method

- Time series plots of the raw data for the background and compliance period will be used to demonstrate out-of-control conditions.
- For those constituents with 100% non-detects, detection of the constituent will trigger a verification test.

(3) For volatile organic constituents (VOCs):

VOC Method

- All anthropogenic VOCs reported by the lab to be greater than their PQL will be considered a potential exceedance, and will trigger verification testing.
- (4) Statistical recalculation of Background Concentrations and Tolerance Limits for each non-impacted monitor well will be done bi-annually and will include all analyses from each well through the end of even years (i.e., 1992, 1994, 1996, etc.).
- b. A concentration limit greater than background, as approved by the Board for use during or after a corrective action.

Concentration limits for ground and surface water shall be determined when sufficient data are available. The concentration limits for ground water shall be determined using wells GMW-2, GMW-3, and GS-1. A replacement background monitoring well shall be installed as part of the corrective action program. Additional ground water monitoring stations surrounding the landfill may be proposed in future corrective action plans. The concentration limits for each ground water monitoring location is shown on Table 4.

Concentration limits for metals and general water quality parameters in surface water at the downstream compliance point, LJC-2, shall be determined from background sampling point LJC-1, upstream of the confluence with Little Jackass Creek. Surface water concentration limits are shown on Table 5.

TABLE 4 - GROUND WATER CONCENTRATION LIMITS¹

Parameter/Constituent	Units	GS-1	GMW-1	GMW-2	GMW-3
Total Dissolved Solids	mg/L	230	*	345	211
Chloride	mg/L	47.4	9.1	16.9	6.1
Sulfate	mg/L	44.3	*	45.5	18.6
Potassium	mg/l	*	*	*	*
Volatile Organic Compounds	µg/L	MDL	MDL	MDL	MDL
Specific Conductance (Field)	µmhos/cm	393	781	546	290
Specific Conductance (Lab)	µmhos/cm	360	788	542	308
pH (Field)	number	5.2-7.5	5.0-7.8	6.0-7.2	6.0-7.6
Turbidity	NTU	*	*	18.8	7.0
Nitrate-Nitrogen	mg/L	Graphic	Graphic	Graphic	Graphic
Dissolved Organic Carbon	mg/L	Graphic	Graphic	Graphic	Graphic
Carbonate	mg/L	Graphic	Graphic	Graphic	Graphic
Bicarbonate	mg/L	100	127	255	187
Alkalinity	mg/L	75.9	102.9	219.1	155.5
Cyanide	mg/L	*	*	*	*
Sulfide	mg/L	Graphic	Graphic	Graphic	Graphic
Calcium	mg/L	*	*	*	*
Magnesium	mg/l	*	*	*	*
Sodium	mg/l	*	*	*	*
Aluminum	mg/L	Graphic	Graphic	MDL	MDL
Antimony	mg/L	MDL	MDL	MDL	MDL
Arsenic	mg/L	MDL	Graphic	MDL	MDL
Barium	mg/L	*	*	*	*
Beryllium	mg/L	*	*	*	*
Cadmium	mg/L	MDL	MDL	MDL	MDL
Chromium	mg/L	MDL	MDL	MDL	MDL
Cobalt	mg/L	*	*	*	*
Copper	mg/L	Graphic	Graphic	MDL	MDL
Iron	mg/L	Graphic	Graphic	3.027	1.405
Lead	mg/L	MDL	MDL	MDL	MDL
Manganese	mg/L	Graphic	Graphic	2.373	1.276
Mercury	mg/L	MDL	MDL	MDL	MDL
Nickel	mg/L	MDL	Graphic	Graphic	MDL
Selenium	mg/L	MDL	MDL	MDL	MDL
Silver	mg/L	MDL	MDL	MDL	MDL
Thallium	mg/L	MDL	MDL	MDL	MDL
Tin	mg/L	*	*	*	*
Vanadium	mg/L	*	*	*	*
Zinc	mg/L	Graphic	Graphic	8.808	10.12
Semi-Volatile Organic Compounds	µg/L	Detect	Detect	Detect	Detect
Chlorophenoxy Herbicides	µg/L	Detect	Detect	Detect	Detect
Organophosphorus Compounds	µg/L	Detect	Detect	Detect	Detect

¹ Concentration limits shall be calculated following collection of a minimum of eight quarterly samples.

MDL = Method Detection Limit. Detection of concentrations of these metals at greater than MDL will trigger verification sampling.

TABLE 5 - SURFACE WATER CONCENTRATION LIMITS¹

<u>Parameter/Constituent</u>	<u>Units</u>	<u>LJC-1</u>
Total Dissolved Solids	mg/l	130
Total Suspended Solids	mg/l	*
Chloride	mg/l	Graphic
Potassium	mg/l	*
Oil & Grease	mg/l	Graphic
Volatile Organic Compounds	µg/l	Detect
Specific Conductance (Field)	µmhos/cm	203
Dissolved Oxygen (Field)	mg/l	11.9
pH	number	6.0-7.7
Carbonate	mg/l	*
Bicarbonate	mg/l	*
Calcium	mg/l	34.3
Magnesium	mg/l	9.1
Sodium	mg/l	*
Sulfate	mg/l	25.4
Nitrate-Nitrogen	mg/l	Graphic
Alkalinity	mg/l	76.5
Dissolved Organic Carbon	mg/l	Graphic
Chemical Oxygen Demand	mg/l	*
Sulfide	mg/l	MDL
Cyanide	mg/l	*
Aluminum	mg/l	*
Antimony	mg/l	MDL
Arsenic	mg/l	MDL
Barium	mg/l	MDL
Beryllium	mg/l	MDL
Cadmium	mg/l	*
Chromium	mg/l	MDL
Cobalt	mg/l	MDL
Copper	mg/l	MDL
Iron	mg/l	Graphic
Lead	mg/l	MDL
Manganese	mg/l	*
Mercury	mg/l	MDL
Nickel	mg/l	MDL
Selenium	mg/l	MDL
Silver	mg/l	MDL
Thallium	mg/l	MDL
Tin	mg/l	MDL
Vanadium	mg/l	MDL
Zinc	mg/l	*

¹ Concentration limits shall be calculated following collection of a minimum of eight quarterly samples.
 MDL = Method Detection Limit. Detection of concentrations of these metals at greater than MDL will trigger verification sampling.

3. Monitoring Points

The ground water monitoring points for corrective action shall be GS-1, GMW-1, GMW-2, GMW-3, and the new replacement background well. The surface water monitoring points for detection monitoring shall be the GLC-1 located immediately downstream of the landfill, LJC-1 (upstream of the confluence with Little Jackass Creek) and LJC-2 (downstream of the confluence) which are the designated background and down-gradient monitoring points.

4. Points of Compliance

The points of compliance for ground water are GS-1 (spring) and monitoring wells GMW-2 and GMW-3. The points of compliance for surface water monitoring are GLC-1 and GLC-2.

5. Compliance Period

The Compliance Period is the number of years equal to the active life of the landfill plus the closure period. Each time the Standard is exceeded (i.e., a release is discovered), the landfill begins a Compliance Period on the date the Board directs the Discharger to begin an Evaluation Monitoring Program. If the Discharger's Corrective Action Program (CAP) has not achieved compliance with the Standard by the scheduled end of the Compliance Period, the Compliance Period is automatically extended until the landfill has been in continuous compliance for at least three consecutive years.

The Discharger shall implement the above monitoring program on the effective date of this Order.

Ordered by: William H. Crooks
WILLIAM H. CROOKS, Executive Officer

27 October 1995

(Date)

Attachments

ATTACHMENT E

CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS

Inorganics (by USEPA Method):

Aluminum	6010	Tin	6010
Antimony	6010	Vanadium	6010
Barium	6010	Zinc	6010
Beryllium	6010	Arsenic	7061
Cadmium	6010	Lead	7421
Total Chromium	6010	Mercury	7470
Chromium VI ⁺ *	7197	Nickel	7520
Cobalt	6010	Selenium	7741
Copper	6010	Thallium	7841
Iron	6010	Cyanide	9010
Manganese	6010	Sulfide	9030
Silver	6010		

Report all peaks identified by the EPA test methods. Surface water (for purposes of statistical analysis), ground water, and leachate samples shall be analyzed and reported as dissolved. Unsaturated zone water samples shall be analyzed and reported as totals. *Chromium VI⁺ shall be analyzed if total chromium is detected above background.

Volatile Organics (USEPA Method 8260):

Acetone
 Acetonitrile (Methyl cyanide) Acrolein
 Acrylonitrile
 Allyl chloride (3-Chloropropene)
 Benzene
 Bromochloromethane (Chlorobromomethane)
 Bromodichloromethane (Dichlorobromomethane)
 Bromoform (Tribromomethane)
 Carbon disulfide
 Carbon tetrachloride
 Chlorobenzene
 Chloroethane (Ethyl chloride)
 Chloroform (Trichloromethane)
 Chloroprene
 Dibromochloromethane (Chlorodibromomethane)
 1,2-Dibromo-3-chloropropane (DBCP)
 1,2-Dibromoethane (Ethylene dibromide; EDB)
 o-Dichlorobenzene (1,2-Dichlorobenzene)
 m-Dichlorobenzene (1,3-Dichlorobenzene)
 p-Dichlorobenzene (1,4-Dichlorobenzene)
 trans- 1,4-Dichloro-2-butene
 Dichlorodifluoromethane (CFC 12)
 1,1-Dichloroethane (Ethylidene chloride)
 1,2-Dichloroethane (Ethylene dichloride)
 1,1-Dichloroethylene (1,1-Dichloroethene; Vinylidene chloride)
 cis- 1,2-Dichloroethylene (cis- 1,2-Dichloroethene)
 trans- 1,2-Dichloroethylene (trans- 1,2-Dichloroethene)
 1,2-Dichloropropane (Propylene dichloride)
 1,3-Dichloropropane (Trimethylene dichloride)
 2,2-Dichloropropane (Isopropylidene chloride)
 1,1 -Dichloropropene
 cis- 1,3-Dichloropropene
 trans- 1,3-Dichloropropene

ATTACHMENT E (continued)

Page 2

Ethylbenzene
Hexachlorobutadiene
2-Hexanone (Methyl butyl ketone)
Isobutyl alcohol
Isodrin
Methacrylonitrile
Methyl bromide (Bromomethane)
Methyl chloride (Chloromethane)
Methyl ethyl ketone (MEK; 2-Butanone)
Methyl iodide (Iodomethane)
Methyl methacrylate
4-Methyl-2-pentanone (Methyl isobutyl ketone)
Methylene bromide (Dibromomethane)
Methylene chloride (Dichloromethane)
Naphthalene
Propionitrile (Ethyl cyanide)
Styrene
1,1,1,2-Tetrachloroethane
1,1,2,2-Tetrachloroethane
Tetrachloroethylene (Tetrachloroethene; Perchloroethylene; PCE)
Toluene
1,2,4-Trichlorobenzene
1,1,1-Trichloroethane, Methylchloroform
1,1,2-Trichloroethane
Trichloroethylene (Trichloroethene; TCE)
Trichlorofluoromethane (CFC- 11)
1,2,3-Trichloropropane
Vinyl acetate
Vinyl chloride (Chloroethene)
Xylene (total)

Semivolatile Organics (USEPA Method 8270 - base, neutral, & acid extractables):

Acenaphthene
Acenaphthylene
Acetophenone
2-Acetylaminofluorene (2-AAF)
Aldrin
4-Aminobiphenyl
Anthracene
Benzo[a]anthracene (Benzanthracene)
Benzo[b]fluoranthene
Benzo[k]fluoranthene
Benzo[g,h,i]perylene
Benzo[a]pyrene
Benzyl alcohol
alpha-BHC
beta-BHC
delta-BHC
gamma-BHC (Lindane)
Bis(2-chloroethoxy)methane
Bis(2-chloroethyl) ether (Dichloroethyl ether)
Bis(2-chloro-1-methylethyl) ether (Bis(2-chloroisopropyl) ether; DCIP)
Bis(2-ethylhexyl) phthalate
4-Bromophenyl phenyl ether
Butyl benzyl phthalate (Benzyl butyl phthalate)

ATTACHMENT E (continued)

Page 3

Chlordane
p-Chloroaniline
Chlorobenzilate
p-Chloro-m-cresol (4-Chloro-3-methylphenol)
2-Chloronaphthalene
2-Chlorophenol
4-Chlorophenyl phenyl ether
Chrysene o-Cresol (2-methylphenol)
m-Cresol (3-methylphenol)
p-Cresol (4-methylphenol)
4,4'-DDD
4,4'-DDE
4,4'-DDT
Diallate
Dibenz[a,h]anthracene
Dibenzofuran
Di-n-butyl phthalate
o-Dichlorobenzene (1,2-Dichlorobenzene)
m-Dichlorobenzene (1,3-Dichlorobenzene)
p-Dichlorobenzene (1,4-Dichlorobenzene)
3,3'-Dichlorobenzidine
2,4-Dichlorophenol
2,6-Dichlorophenol
Dieldrin
Diethyl phthalate
p-(Dimethylamino)azobenzene
7,12-Dimethylbenz[a]anthracene
3,3'-Dimethylbenzidine
2,4-Dimethylphenol (m-Xylenol)
Dimethyl phthalate
m-Dinitrobenzene
4,6-Dinitro-o-cresol (4,6-Dinitro-2-methylphenol)
2,4-Dinitrophenol
2,4-Dinitrotoluene
2,6-Dinitrotoluene
Di-n-octyl phthalate
Diphenylamine
Endosulfan I
Endosulfan II
Endosulfan sulfate
Ethyl methanesulfonate
Famphur
Fluoranthene
Fluorene
Heptachlor
Heptachlor epoxide
Hexachlorobenzene
Hexachlorobutadiene
Hexachlorocyclopentadiene
Hexachloroethane
Hexachloropropene
Indeno(1,2,3-c,d)pyrene
Isophorone
Isosafrole

ATTACHMENT E (continued)

Page 4

Kepone
Methapyrilene
Methoxychlor
3-Methylcholanthrene
Methyl methanesulfonate
2-Methylnaphthalene
Naphthalene
1,4-Naphthoquinone
1-Naphthylamine
2-Naphthylamine
o-Nitroaniline (2-Nitroaniline)
m-Nitroaniline (3-Nitroaniline)
p-Nitroaniline (4-Nitroaniline)
Nitrobenzene
o-Nitrophenol (2-Nitrophenol)
p-Nitrophenol (4-Nitrophenol)
N-Nitrosodi-n-butylamine (Di-n-butylnitrosamine)
N-Nitrosodiethylamine (Diethylnitrosamine)
N-Nitrosodimethylamine (Dimethylnitrosamine)
N-Nitrosodiphenylamine (Diphenylnitrosamine)
N-Nitrosodipropylamine (N-Nitroso-N-dipropylamine; Di-n-propylnitrosamine)
N-Nitrosomethylethylamine (Methylethylnitrosamine)
N-Nitrosopiperidine
N-Nitrosopyrrolidine
5-Nitro-o-toluidine
Pentachlorobenzene
Pentachloronitrobenzene (PCNB)
Pentachlorophenol
Phenacetin
Phenanthrene
Phenol
p-Phenylenediamine
Polychlorinated biphenyls (PCBs; Aroclors)
Pronamide
Pyrene
Safrole
1,2,4,5-Tetrachlorobenzene
2,3,4,6-Tetrachlorophenol
o-Toluidine
Toxaphene
1,2,4-Trichlorobenzene
2,4,5-Trichlorophenol
2,4,6-Trichlorophenol
0,0,0-Triethyl phosphorothioate
sym-Trinitrobenzene

ATTACHMENT E (continued)

Page 5

Organophosphorus Compounds (USEPA Method 8141):

0,0-Diethyl 0-2-pyrazinyl phosphorothioate (Thionazin)
Dimethoate
Disulfoton
Methyl parathion (Parathion methyl)
Parathion
Phorate

Chlorinated Herbicides (USEPA Method 8150):

2,4-D (2,4-Dichlorophenoxyacetic acid)
Dinoseb (DNBP; 2-sec-Butyl-4,6-dinitrophenol)
Silvex (2,4,5-Trichlorophenoxypropionic acid; 2,4,5-TP)
2,4,5-T (2,4,5-Trichlorophenoxyacetic acid)

INFORMATION SHEET

TUOLUMNE COUNTY AND
UNITED STATES BUREAU OF LAND MANAGEMENT
BIG OAK FLAT (GROVELAND) SANITARY LANDFILL FACILITY
CLASS III LANDFILL
TUOLUMNE COUNTY

The landfill consists of a 10.5-acre site, of which 5-acres is dedicated to refuse disposal. The landfill is in a rural area with the majority of the surrounding land owned by the Federal Bureau of Land Management (BLM). The landfill itself sits on BLM land and is leased for use by the County. The lease expired in 1992 but was granted an extension while the County seeks to purchase the land. The highest concentration of residences is about one-half mile to the northeast of the site.

The facility has been in operation since 1965 and receives about 5% of the County's refuse, mainly from the Highway 120 corridor.

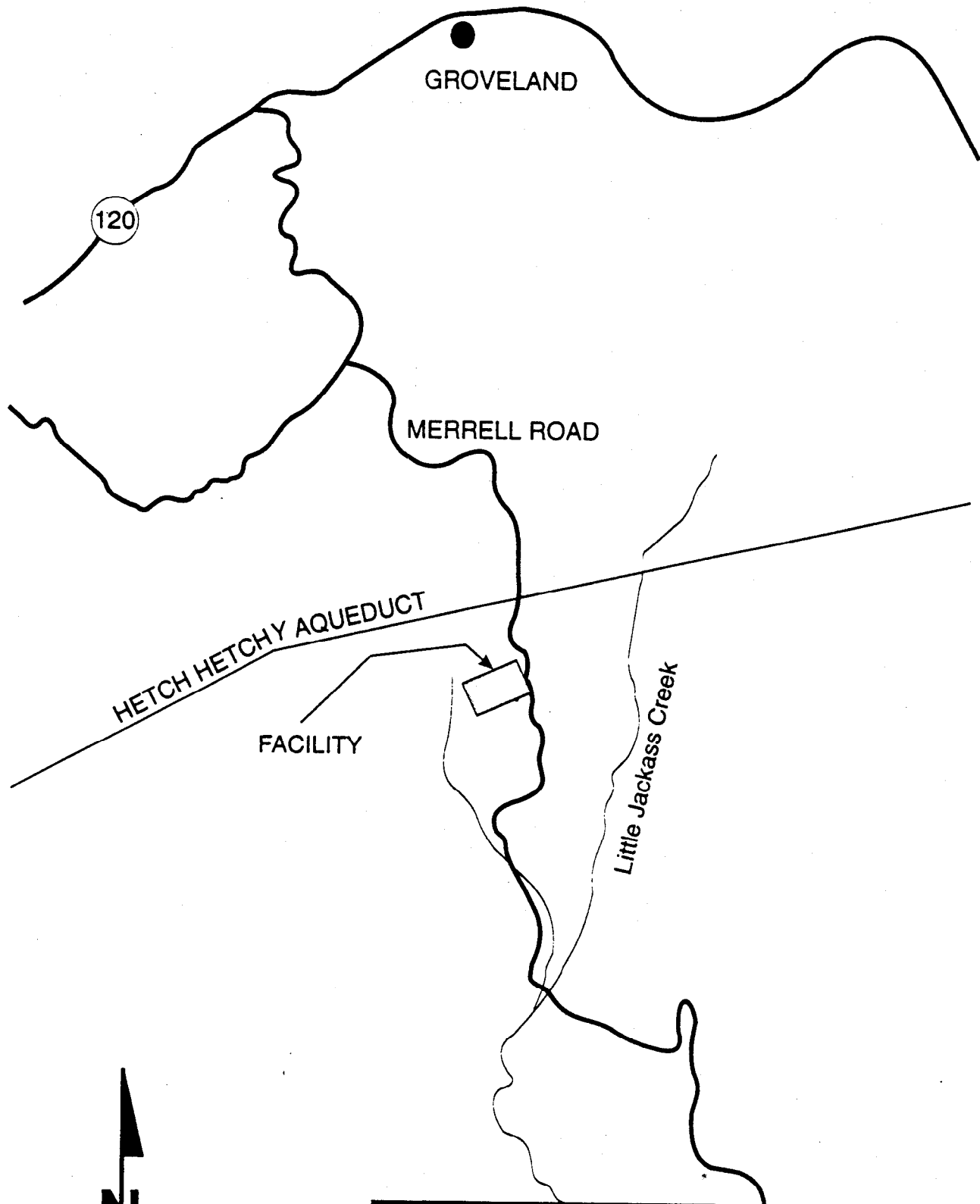
The landfill is at the upper end of a ravine near the apex of a knoll. The site is characterized by a lack of soil mantle and 10 to 20 feet of weathered rock (slate) atop bedrock. The underlying bedrock is reported to be deficient in fine materials. In general, the hydrologic regime at this site is expected to be a hardrock, fracture-dominated type, with water moving in water-bearing fractures and veins. Seasonal saturated flow may occur along the weathered rock/unweathered rock interface.

Ground water in this area is reported to be limited. The majority of domestic water is supplied by the Groveland Community Services District, which derives its water source from the underground Hetch Hetchy Mountain Tunnel. A scattering of domestic supply wells can be found in the area within one-half mile of the site. These wells are reported to tap moderately deep fractures (100-300 feet) with varying yields.

An average of 36 inches of rain falls at this site, mainly during the period of November-May. The rest of the year is characterized by hot, dry weather with an average evaporation rate of 50 inches. Most surface runoff during the wet season is to a diked pond at the base of the landfill's working area. This pond most likely catches landfill leachate as well. It is routinely overflowed in the past to Little Jackass Creek. Ground water sampling has confirmed the presence of volatile organic compounds in ground water beneath the site.

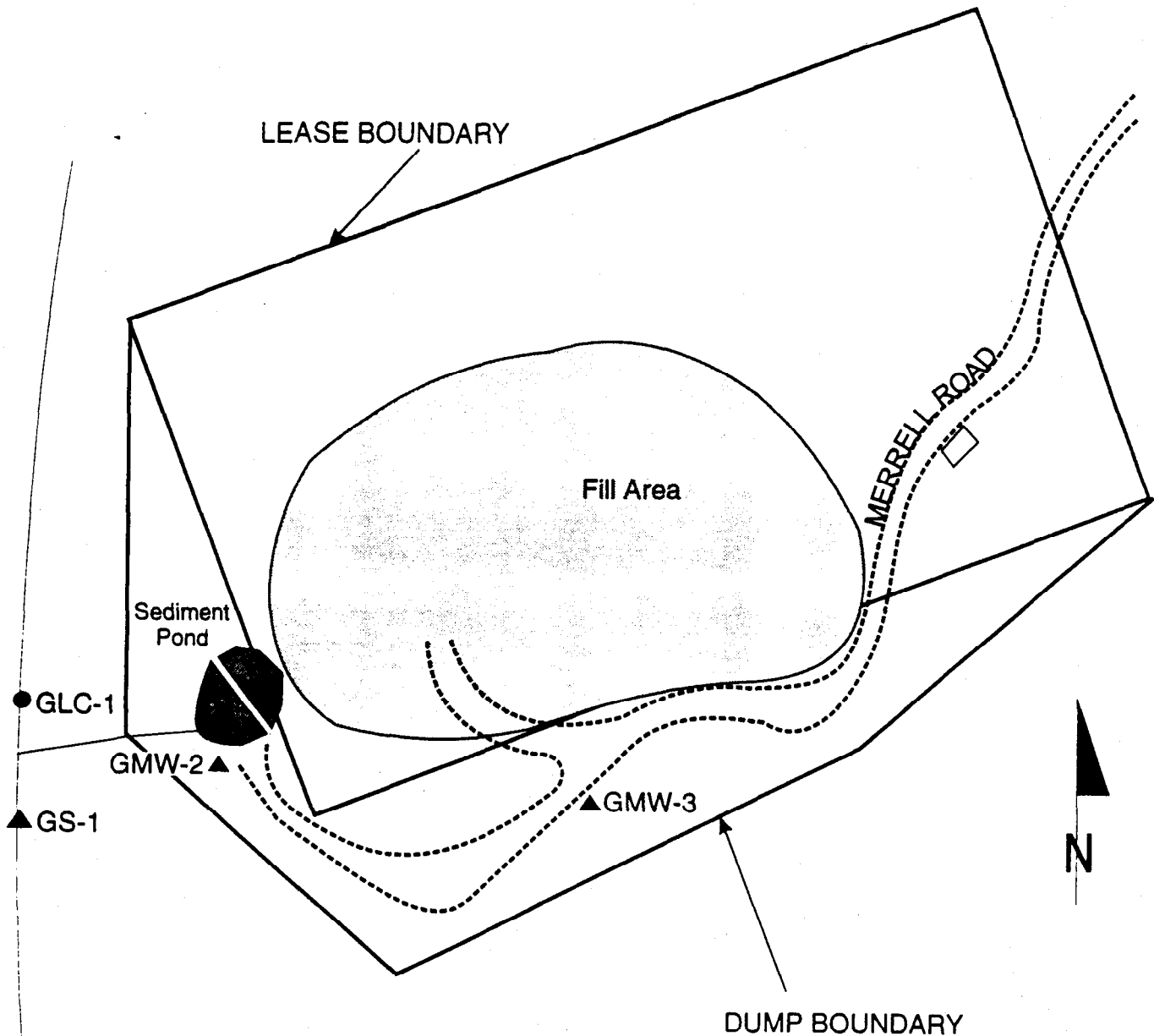
This Order revises the monitoring plan to comply with the requirements under Order 93-200. This order also requests sampling of the sedimentation basin to characterize the nature of the flow entering the basin. At the current rate of filling the landfill is expected to reach final grades by the year 2001, however the Discharger is moving forward with plans to establish a transfer station in the area. This order requests the Discharger to submit a corrective action proposal to address contamination source abatement to prevent ongoing releases from the facility. Furthermore, a report is requested to be submitted which evaluates the effectiveness of the corrective action program. Closure and postclosure maintenance plans will be submitted six months before closure activities occur at the landfill. ✓

27 October 1995
KAS



GROVELAND SANITARY LANDFILL FACILITY
CLASS III LANDFILL
TUOLUMNE COUNTY

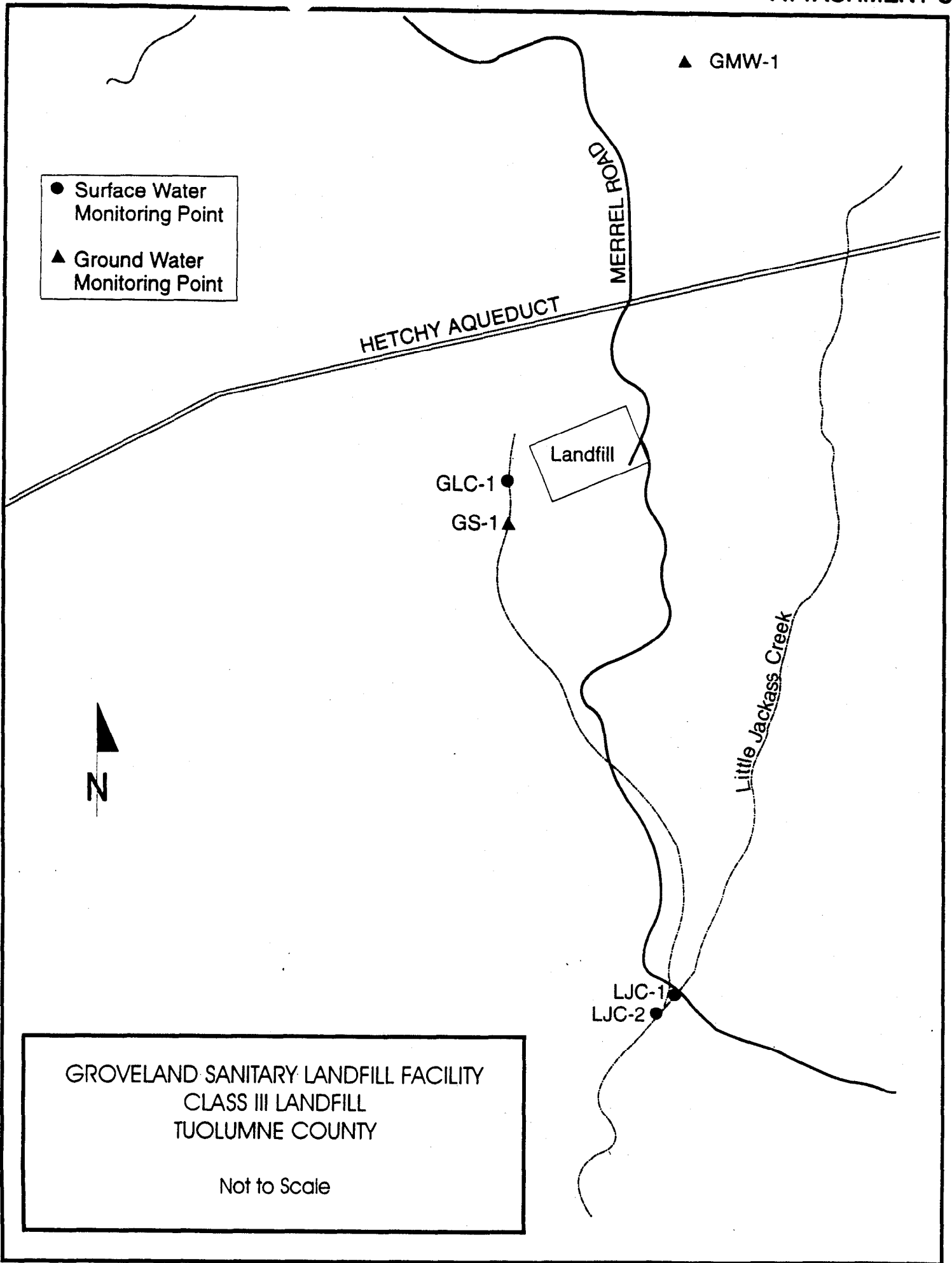
Not to Scale



- Surface Water Sampling Point
- ▲ Ground Water Sampling Point

GROVELAND SANITARY LANDFILL FACILITY
CLASS III LANDFILL
TUOLUMNE COUNTY

Not to Scale



ATTACHMENT D

MONITORING PARAMETERS FOR DETECTION MONITORING

Surrogates for Metallic Constituents:

pH	Chloride
Total Dissolved Solids	Sulfate
Specific Conductivity	Nitrate nitrogen

Constituents included in VOC_{water} (by USEPA Method 8260):

Acetone
Acrylonitrile
Benzene
Bromochloromethane
Bromodichloromethane
Bromoform (Tribromomethane)
Carbon disulfide
Carbon tetrachloride
Chlorobenzene
Chloroethane (Ethyl chloride)
Chloroform (Trichloromethane)
Dibromochloromethane (Chlorodibromomethane)
1,2-Dibromo-3-chloropropane (DBCP)
1,2-Dibromoethane (Ethylene dibromide; EDB)
o-Dichlorobenzene (1,2-Dichlorobenzene)
p-Dichlorobenzene (1,4-Dichlorobenzene)
trans- 1,4-Dichloro-2-butene
1,1-Dichloroethane (Ethylidene chloride)
1,2-Dichloroethane (Ethylene dichloride)
1,1-Dichloroethylene (1,1-Dichloroethene; Vinylidene chloride)
cis-1,2-Dichloroethylene (cis- 1,2-Dichloroethene)
trans-1,2-Dichloroethylene (trans-1,2-Dichloroethene)
1,2-Dichloropropane (Propylene dichloride)
cis-1,3-Dichloropropene
trans-1,3-Dichloropropene
Ethylbenzene
2-Hexanone (Methyl butyl ketone)
Methyl bromide (Bromomethane)
Methyl chloride (Chloromethane)
Methylene bromide (Dibromomethane)
Methylene chloride (Dichloromethane)
Methyl ethyl ketone (MEK; 2-Butanone)
Methyl iodide (Iodomethane)
4-Methyl-2-pentanone (Methyl isobutylketone)
Styrene
1,1,1,2-Tetrachloroethane
1,1,2,2-Tetrachloroethane
Tetrachloroethylene (Tetrachloroethene; Perchloroethylene)
Toluene
1,1,1-Trichloroethane (Methylchloroform)
1,1,2-Trichloroethane
Trichloroethylene (Trichloroethene)
Trichlorofluoromethane (CFC-11)
1,2,3-Trichloropropane
Vinyl acetate
Vinyl chloride
Xylenes